

## REMARKS

In the Office Action, claims 1-9, 37-53, and 92-106 were pending. Claims 1-9 and 37-53 were rejected. Applicants acknowledge with appreciation the allowance of claims 92-106. In this response, no claims have been amended, added, or cancelled. Thus, claims 1-9, 37-53, and 92-106 remain pending. Reconsideration of this application, in light of the following remarks, is respectfully requested.

The Examiner objected to informalities within the specification. In response, the Applicants have amended the specification accordingly. The Applicants have removed the purportedly new subject matter. Furthermore, the applicants have added “ $S$  is one of the  $J^{M \times N}$  possible labelings of blocks of size  $m \times n$ , where there are  $\frac{M/2^j}{m} \times \frac{N/2^j}{n}$  blocks of size  $m \times n$  at level  $j \in \{1 \dots J\}$ .” The amendments show the relationship between codeblocks in the wavelet domain and the original image. Furthermore, the amendments are consistent with the example provided by the Applicants in paragraph 0058 which were included in the specification as originally filed. Thus, the Applicants respectfully request withdrawal of the objection to the specification.

The Examiner rejected claims 1, 3, 4, 6, 7, and 9 under 35 U.S.C. § 103(a) as being unpatentable over “Fast Segmentation of the JPEG Compressed Documents,” *Journal of Electronic Imaging, Vol.7(2), April 1998* by Queiroz et al. (hereinafter “Queiroz”) in view of the JPEG 2000 Specification. The Applicants respectfully disagree with the rejection because the references, alone or in combination, fail to describe each and every limitation as claimed in claim 1, 3, 4, 6, 7, and 9.

Queiroz describes “techniques that allow the segmentation of JPEG-compressed images without decompressing them” (Queiroz, sections 1.1). The segmentation technique creates “a 2D map (image) where each entry (pixel) corresponds to the number of bits used to encode an 8 x 8 block of the original image” (Queiroz, section 3). Thus, a one-to-one relationship is created between the encoding cost map (ECM) and 8 x 8 blocks of the image in the image domain, where each pixel in the ECM map conveys information about an 8 x 8 block of pixels of the original image. Each of the 8 x 8 blocks is used as the measuring unit because all JPEG image coders utilize a discrete cosine transform (DCT) which only operates on 8x8 blocks of pixels from the image domain (Queiroz, section 2.1). From the ECM map, Queiroz performs image processing operations (Queiroz, section 4). As such, Queiroz describes an image processing technique that performs operations based on information, from the image domain, about an image.

A JPEG 2000 image differs from a conventional JPEG image because the JPEG 2000 standard utilizes wavelet technology (*See* JPEG.org, [http://www.jpeg.org/faq.php?action=show\\_answer&question\\_id=q3d5bc0701c9b6](http://www.jpeg.org/faq.php?action=show_answer&question_id=q3d5bc0701c9b6), “FAQ: What is JPEG 2000?”). The JPEG 2000 specification, and corresponding JPEG 2000 image processing techniques, was developed due to shortcomings in the JPEG standard. The JPEG 2000 Specification describes the format of an image bitstream for a JPEG 2000 image. The bitstream includes header bits and corresponding image description bits that are utilized by JPEG 2000 image coders and JPEG 2000 image viewers for displaying and compressing an image (Table 1, Specification, Page 14). However, JPEG 2000 specification merely describes the standard format which is required to make a JPEG 2000 image bitstream compliant with standard.

The Applicants respectfully submit that the references, alone or in combination, fail to describe or suggest “generating a granular multi-scale entropy distribution using multi-scale information obtained from a header of a compressed bitstream; and applying one or more image processing operations based on the granular multi-scale entropy distribution,” as claimed in claim 1.

Queiroz describes a particular image processing technique that is specific to compressed JPEG images. The techniques described by Queriz perform operations based on information which directly corresponds to 8 x 8 blocks of pixels of an image in the image domain. As a result, Queiroz only utilizes image-domain information and describes performing operations based on the data corresponding to an image in the image domain. Thus, Queiroz fails to describe or suggest generating multi-scale information, or performing image processing operations based on multi-scale image information. Furthermore, the JPEG 2000 standard only describes a compliant JPEG 2000 image bitstream, without describing or suggesting performing any image processing operations. Therefore, neither Queiroz nor the JPEG 2000 Specification, alone or in combination, teaches “generating a granular multi-scale entropy distribution using multi-scale information obtained from a header of a compressed bitstream” or “applying one or more image processing operations based on the granular multi-scale entropy distribution,” as claimed in claim 1.

Even if the references were combined, their combined teachings would not disclose each and every element of the invention as claimed in claim 1. As noted by the Applicants, in previous office actions and the Applicants’ patent application, the techniques described by Queiroz do not utilize header based processing because entropy information is not available from conventional JPEG headers. The Examiner therefore

brought in the JPEG 2000 Specification which notes that entropy values are available for JPEG 2000 images. However, even if such a combination were made, the combination would fail to describe or suggest “generating a granular multi-scale entropy distribution using multi-scale information obtained from a header of a compressed bitstream; and applying one or more image processing operations based on the granular multi-scale entropy distribution.” As noted above, Queiroz only describes performing operations based on image-domain information about an image contained in an ECM map for 8 x 8 blocks of pixels of the image. If Queiroz were able to utilize the header information available in a JPEG 2000 image, Queiroz would then describe building the ECM map for the 8 x 8 blocks of pixels of the image from information in the image’s header. The ECM map, and the subsequent image processing, however, would only be based on image-domain information gathered from the image’s bitstream header. As a result, the processing techniques of Queiroz would not be applied based on multi-scale information. Therefore, even if Queiroz and the JPEG 2000 specification were combined, the references would fail to describe or suggest “generating a granular multi-scale entropy distribution using multi-scale information obtained from a header of a compressed bitstream; and applying one or more image processing operations based on the granular multi-scale entropy distribution.”

Thus, the Applicants respectfully request withdrawal of the rejection of claim 1 under § 103 by Queiroz in view of the JPEG 2000 specification. Independent claims 4 and 7 contain similar language and features as claim 1. Therefore, for similar reasons, Applicants respectfully submit that claims 4 and 7 are not obvious under 35 U.S.C. § 103(a) over Quieroz in view of the JPEG 2000 specification. Further, claims 3, 6, and 9 depend from claims 1, 4, and 7 respectively, and include additional features and

limitations. Thus, for at least the same reasons discussed above, claims 3, 6, 9 are also not rendered obvious under 35 U.S.C. § 103(a). The Applicants respectfully request withdrawal of the rejections.

The Examiner further rejected claims 2, 5, and 8 under 35 U.S.C. § 103(a) as being unpatentable over Queiroz in view of the JPEG 2000 specification, and further in view of WO 00/01153 Jändel et al. (hereinafter “Jändel”). The Applicants respectfully disagree with the rejections

As discussed above, Queiroz and the JPEG 2000 specification fail to describe or suggest “generating a granular multi-scale entropy distribution using information obtained from a header of a compressed bitstream; and applying one or more image processing operations based on the granular multi-scale entropy distribution,” as claimed in independent claim 1, and similarly in claims 4 and 7. However, Jändel merely describes encoding and decoding selected regions of an image (Jändel, page 3, line 4 to page 4, line 10). As such Jändel also fails to describe or suggest the missing limitations discussed above.

Thus, the references alone, or in combination, fail to describe or suggest each and every element as claimed in claims 1, 4, and 7. Claims 2, 5, and 8 depend from claims 1, 4, and 7, and claim additional features and limitations to. Therefore, for at least the same reasons, claims 2, 5, and 8 are not rendered obvious under 35 U.S.C. § 103(a) over Queiroz, the JPEG 2000 specification, and Jändel. The Applicants respectfully request withdrawal of the rejections.

The Examiner further rejected claims 37-44 and 45-53 for reasons similar to the rejection of claim 2. However, as discussed above, the Applicants submit that claim 2 is not rendered obvious in view of the references cited. Thus, for reasons similar to the

reasons discussed above, the Applicants submit that claims 37-44 and 45-53 have overcome the applicable rejections under 35 U.S.C. § 103. The Applicants respectfully request withdrawal of the rejections.

In view of the foregoing, Applicant respectfully submits that applicable rejections and objections have been overcome.

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Respectfully submitted,  
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: 7/11/08

✓  
Michael J. Mallie  
Attorney for Applicant  
Reg. No. 36,591

12400 Wilshire Boulevard  
Seventh Floor  
Los Angeles, CA 90025-1026  
(408) 720-8300



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*Judy L. Steinkraus* 07/21/2006  
Judy L. Steinkraus

Application No.: 10/044,420	Filing Date: 01/10/2002	Docket No.: 74451.P138
Date Mailed: 07/21/2006	Due Date: 07/21/2006	Atty/Sec: MJM WLJ jxs
Title: HEADER-BASED PROCESSING OF IMAGES COMPRESSED USING MULTI-SCALE TRANSFORMS		
First Named Inventor: Berkner, et al.		
The following has been received in the U.S.P.T.O. on the date stamped hereon:		
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<input type="checkbox"/> RCE (Request for Continued Examination)	<input type="checkbox"/> Notice of Appeal	
<input type="checkbox"/> Transmittal of Formal Drawings	<input type="checkbox"/> Appeal Brief & two copies (____ pgs. each)	
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